

SPECIAL PROJECTS
FLIGHT SURGEON'S
GUIDE

On file USAF release
instructions apply.

FORWARD

The purpose of this manual is to provide guidance to the Squadron Surgeon in the performance of his duties. Standard operating instructions, crew control procedures, and reporting forms are included for reference. This manual supercedes Manual 50-1161-1 dated 1 August 1962.

FORWARD

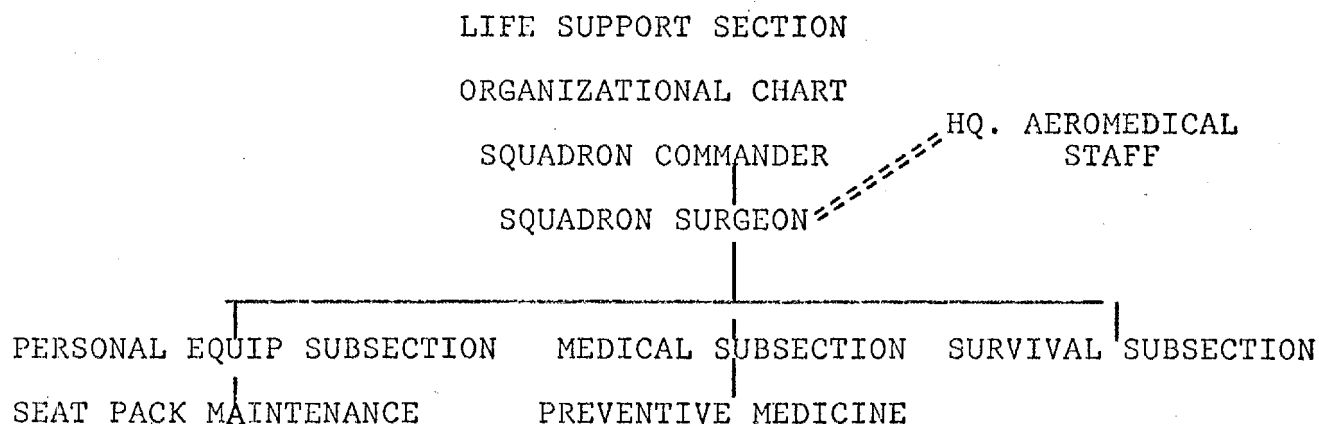
- SECTION I. THE LIFE SUPPORT SECTION
- II. MEDICAL SUBSECTION
- III. PERSONAL EQUIPMENT SUBSECTION
- IV. SURVIVAL SUBSECTION
- V. STAGINGS AND DEPLOYMENT
- VI. ANNUAL PHYSICALS
- VII. PHYSIOLOGIC TRAINING
- VIII. PHYSICAL FITNESS PROGRAM
- IX. WEIGHT CONTROL PROGRAM
- X. PREFLIGHT CREW CONTROLS
- XI. PREFLIGHT PILOT SCHEDULE
- XII. DIETARY CONSIDERATIONS
- XIII. PREFLIGHT PHYSICAL EVALUATION
- XIV. DRUGS AND FLYING
- XV. PREBREATHING REQUIREMENTS
- XVI. RUNWAY ALERT
- XVII. POSTFLIGHT CREW CONTROLS
- XVIII. AIRCRAFT ACCIDENT INVESTIGATION
- XIX. MONTHLY ACTIVITIES REPORTS
- XX. GROUND SAFETY
- XXI. DISASTER CONTROL

- APPENDIX
- A. CREW CONTROL FORM (2 pg)
 - B. MEDICAL STATUS RECORD
 - C. HIGH FLIGHT RECORD
 - D. ALTITUDE PHYSIOLOGY
 - E. DYSBARISM
 - F. OXYGEN CURVES
 - G. ENVIRONMENT SURVEY GUIDE
 - H. PREPOSITIONING - QUICK REACTION DEPLOYMENT PLAN

I

SECTION I

The Life Support Section - The Life Support Section is under the direction of the Squadron Surgeon, who in turn is a member of the Squadron Commander's staff. This section has primary responsibility for all systems related to supporting the life of assigned pilots. This includes all factors concerned with maintaining optimum physical and mental status of pilots in normal flight and emergency situations. Life support subsections are Medical, Personal Equipment, and Survival. The personnel strength of this section will vary according to need.



II

SECTION II

Medical Subsection - The assigned Medical Staff will have responsibility for the following:

- a. Medical care for primary mission pilots.
- b. Crew control for primary mission pilots.
- c. Routine medical care for all assigned military and DAF personnel.
- d. Emergency and deployment medical care for assigned and attached personnel.
- e. Immunizations.
- f. Environmental survey of deployment sites.
- g. Deployment medical and quasi-medical support.
- h. Ground safety.
- i. Medical disaster control.
- j. Accident investigation board (medical representation).
- k. Crash, rescue, and emergency ambulance service.

l. Additional medical support will be provided as required by the local Base Hospital and the Headquarters Medical Staff. Non-expendable medical supplies are obtained through unit supply; expendable medical supplies are drawn through the Base Hospital Medical Supply section. Funding for each fiscal year must be arranged with the Base Hospital.

III

SECTION III

Personal Equipment Subsection - The Personal Equipment technicians are responsible to the Squadron Surgeon for the following:

- a. Primary mission pilots' special flying equipment.
- b. Primary mission pilots' preflight suiting and cockpit hook-up.
- c. Support aircraft personal equipment.
- d. Physiological training.
- e. Training in normal and emergency use of special flying equipment.
- f. Control of survival equipment.
- g. Seat kit maintenance.

IV

SECTION IV

Survival Subsection - The Survival Subsection will be responsible for the following:

- a. Selection of survival items.
- b. Training in use of survival items.
- c. Special survival training for primary mission pilots.
- d. Pilot rescue procedures.
- e. Survival training for assigned flying personnel.
- f. Test and evaluation of Life Support Equipment.

V

SECTION V

Stagings and Deployment

a. Squadron deployment to zone of the interior and overseas bases creates special problems for the Medical Staff. In addition to arranging for all matters concerned with the crew conditioning program, it is necessary to establish means of routine and emergency medical care for all deployment personnel. Another area requiring the attention of the Squadron Medical Staff is that of preventive medicine and sanitation. Because of the importance of the above considerations, it is important that the Squadron Surgeon be informed about the environmental situation at any proposed site. This can be accomplished either by a report from a medical officer who has recently been to the area or by a first hand predeployment visit by a member of the squadron Medical Staff. A guide for this evaluation is available to the Squadron Surgeon. (SEE APPENDIX G.)

b. Basically, the Medical Subsection should be prepared for two simultaneous deployments. Also, should the need arise, a third deployment could be handled as long as one of the three areas is already equipped with medical support facilities.

c. The following is a breakdown of medical support requirements for various types of deployment:

(1) To a Base with established medical facilities - Medical bag for use by Personal Equipment or Medical technician. All but most simple medical problems to be handled by the base facility.

(2) To an established base with limited medical facilities-Medical technician or Flight Surgeon with air transportable dispensary A. Surgeon and Preventive Medicine technician with air transportable dispensary B. Also additional specific items as necessary.

d. The following is a listing of kit components:

(1) Air transportable dispensary A -

Pharmacy

Medical and surgical treatment kit

Medical bag

(2) Air transportable dispensary B -

Pharmacy

Medical and surgical treatment kit

Mass casualty treatment kit

Preventive medicine kit

Field laboratory

Medical bag

(3) Additional items available for incorporation as needed -

Medical staging vehicle equipped for pilot transfer and crash-rescue service.

Ice chest for perishable medicines.

Water filtration kit.

Medical resupply boxes.

NOTE: SEE APPENDIX H FOR PREPOSITIONING CONCEPT.

e. Immunization will be given by the Medical section in accordance with AFR 161-13 with all assigned personnel to be maintained as alert forces. Other immunizations will be given as required. Higher Headquarters will inform the Squadron Surgeon of requirements for specific areas. Another source of area requirements is the W.H.O. weekly epidemiological record.

f. The Squadron Surgeon will do all in his power to assure that personnel returning from overseas duty are free from communicable disease. An additional duty is to act as U.S. Public Health Aircraft Quarantine Officer upon return to the United States should no regular official be available. Forms are available for this procedure.

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SECTION VI

Annual Physical Examinations -

a. Primary Mission Pilots-

Annual physical examinations for primary mission pilots will be conducted at a headquarters designated hospital. Appointments will be arranged yearly by the Squadron Surgeon via telephone. Headquarters will be informed in advance of scheduled examinations. Because of operational requirements, it is recommended that these examinations be scheduled en bloc during the summer months. The annual aeromedical survey will consist of the following examinations:

General Examination

1. Medical History, Aviation History and Physical Exam
2. Proctoscopic 3. Prostate and Genitals 4. Dental Exam
5. Flying Adaptability Rating

Laboratory Tests

1. Hemoglobin 2. Hematocrit 3. WBC 4. Differential WBC including smear exam by Hematologist 5. Serology
6. Sedimentation rate 7. Routine urinalysis 8. Serial stool exam with occult blood determination: microscopic for ova and parasites and culture for routine pathogens 9. Dianex, if over age 40 10. BSP

Biochemistry

1. Blood cholesterol 2. Fasting blood sugar 3. Blood urea nitrogen 4. Uric acid (blood)

Bacteriology

Throat culture and smear sensitivities if requested by Otorhinolaryngologist.

X-Ray Exam

1. Chest (PA inspiration, PA expiration, Rt. lateral)
2. Teeth (periapical and bitewing views).

Ophthalmology

1. Dilation
2. Visual field exam
3. Tonometry
4. Slit lamp exam
5. Dynamic visual acuity
6. Gonioscopy
7. Xephthalmometer
8. Depth perception test
9. Dark room exam for night visual adaptation
10. Photograph of conjunctival vessels and retina.

Otorhinolaryngology

1. Indirect laryngoscopy
2. Nasopharyngoscopy
3. Caloric tests with nystagmography
4. Audiograms with and without background noise.

Cardiovascular Exam

1. Tilt table test
2. Electrocardiogram w/Master 2-step
3. Ballistocardiogram
4. Standard cold pressor test.

Neurological and Neuromuscular Evaluation.

General neurophysiatrie clinic exam and muscle testing.

Special Physiologic Exam

1. Physical competence test
2. Pulmonary function test and pulmonary diffusion capacity
3. (Total body radiation count and potassium 40 determination
4. Specific gravity of the whole body.

Psychological Exam (Neuropsychological)

1. Memory
2. Sequential high-speed decisions
3. Sensory perception
4. Personality Appraisal Interview.

Upon completion of the medical examination, the doctor in charge will complete the return copy of the examination form indicating any major changes from the last examination and his recommendations regarding the examinees' fitness or qualification for continued flying high-performance aircraft. This interim medical report will be mailed to the Squadron Surgeon within forty-eight (48) hours following the completed medical evaluation. The complete detailed reports of the medical evaluation on each member will be mailed via registered airmail to Headquarters with an information copy to the Squadron Surgeon. After review of the completed medical examination by the Squadron Surgeon, he will make appropriate comments and recommendations on the Medical report and indicate either his qualification or disqualification of the individual member based upon his total knowledge of the case. After informing the Unit Commander of his medical decision on the operational member, he will mail a copy of his summary and findings on each case to the Headquarters Aerospace Medical Consultant who will review and add same to each copy of the medical examination, adding his own final comments and/or recommendations to the report as indicated. A copy of the report, with comments and certification by the Squadron Surgeon and final remarks by the

Aerospace Medical Consultant, will be returned to the operational unit for inclusion in the official medical files. The completed original record will be placed in the official medical files and the consultant will retain a completed copy for his working file. The Squadron Surgeon will retain the original information copy in his personal working files. FAA certificates will be given directly to the pilots.

b. Other Flight Physicals -

All persons on flying status other than primary mission pilots will have the sub-professional portion of their annual flying physicals accomplished at the nearest military medical facility. The professional portion will be performed by the Squadron Surgeon. The final typed physical will be filed in the personal medical record of the individual concerned. The medical Recommendation for Flying (1042) will be filed in the medical record and Form 5 section. Other than normal physicals will be forwarded to Headquarters for further action. Examinations will be performed in accordance with AFM-160-1.

c. Military and DAF Personnel -

Periodic physical examinations on military and DAF personnel will be accomplished in accordance with AFM-160-1. The Squadron Surgeon will accomplish the professional portion. All remaining sections will be performed at the nearest military medical facility.

d. Contract Personnel -

Civilian contract personnel will have their periodic examinations performed by their company physicians. A report of each examination should be forwarded to the Squadron Surgeon.

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VII

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SECTION VII

Physiologic Training -

a. Primary mission pilots' physiological training will be accomplished in accordance with AFR 50-27. A squadron Personal Equipment technician will act as an inside observer and a Flight Surgeon will be present for all primary mission pilot chamber runs.

b. All persons on flying status other than (a) above will accomplish physiologic training in accordance with AFR 50-27 at the most convenient military altitude chamber.

c. Passenger-type indoctrination will be given to all assigned personnel. Training will be accomplished jointly by Squadron Life Support and local altitude chamber personnel. Military and DAF chamber runs will be performed at the most convenient military altitude chamber.

VIII

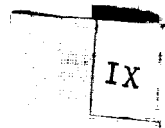
SECTION VIII

Physical Fitness Program -

a. The USAF AEROBICS (Physical Fitness Program) as set forth in AFP 50-56 is to be encouraged for primary mission pilots. Also recommended is a personal program of athletics such as golf, tennis, and swimming. These programs are necessary to maintain maximum physical fitness and reserve strength for the rigors of long duration flying. In emergency situations, the physical competence of a pilot may well spell the difference between safety and disaster, life and death. At present, an exercise tolerance rating will serve as an index of pilot fitness. Those not rated "Good" or better will be advised of the above program and Headquarters will be informed. USAF AEROBICS testing may be required at the discretion of the Commander.

b. The USAF physical fitness program will be required for all military personnel in accordance with AFP 50-56. This program will also be encouraged for all civilians.

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SECTION IX

Weight Control Program -

Pilots will be weighed on a monthly basis. Measures will be taken to maintain pilots at an ideal weight at all times. The desirable ranges as set forth by the Subcommittee on Nutrition, Committee on Public Health, Medical Society of the County of New York, from the data of the Build and Blood Pressure Study, 1959, Society of Actuaries, will be used as a guideline in advising the pilots on weight control. These weights are set forth below, measured in pounds, in indoor clothing, for men twenty-five years of age and older. Height is measured with shoes on, with one-inch heels. Estimation of frame of the body is basically a clinical judgment and should be determined by the local Flight Surgeon.

<u>HEIGHT</u>	<u>SMALL FRAME</u>	<u>MEDIUM FRAME</u>	<u>LARGE FRAME</u>
5'2"	112-120	118-129	126-141
5'3"	115-123	121-133	129-144
5'4"	118-126	124-136	132-148
5'5"	121-129	127-139	135-152
5'6"	124-133	139-143	138-156
5'7"	128-137	134-147	142-161
5'8"	132-141	138-152	147-166
5'9"	136-145	142-156	151-170

<u>HEIGHT</u>	<u>SMALL FRAME</u>	<u>MEDIUM FRAME</u>	<u>LARGE FRAME</u>
5'10"	140-150	146-160	155-174
5'11"	144-154	150-165	159-179
6'0"	148-158	154-170	164-184
6'1"	152-162	158-175	168-189
6'2"	156-167	162-180	173-194
6'3"	160-171	167-185	178-199
6'4"	164-175	172-190	182-204

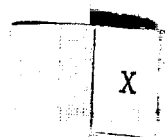
Pilots will be expected to maintain the ideal weights as determined for them. Ideal weight plus ten pounds will be considered as an acceptable range. Any pilot weighing less than his ideal weight will be encouraged by the Flight Surgeon to come within the ideal range. No administrative action will be taken as a result of underweight, unless symptoms of malnutrition or physical disease are present.

In this event, the pilot will be declared medically disqualified for flying duties. No administrative action will apply to any pilot weighing up to ten pounds in excess of the ideal weight, although he will be advised by the Flight Surgeon to reduce to his ideal level. If the weight is between ten and fifteen pounds in excess of the ideal, the pilot will be given two months to reduce to a level within his acceptable range. If after this period of time, the pilot's weight is not within his acceptable range, he will be grounded until such time

as his proper weight is reached. Any pilot weighing more than fifteen pounds in excess of his ideal weight will be expected to reduce at a rate of a minimum of five pounds per month until his weight reaches the range of acceptable levels. If at any time he fails to show this rate of weight reduction, he will be grounded immediately and will remain so until his acceptable weight range is accomplished. If, in the opinion of the Flight Surgeon, any grounded pilot fails to make appropriate progress toward a proper weight level, by virtue of disregard for this control program, said pilot can be recommended by the surgeon for release from flight duties. Recommendations will be forwarded through the Detachment Commander to Headquarters, where the final decision will be made. This action may also be initiated by Headquarters. Grounding action and recession of same shall be accomplished by the local Squadron Flight Surgeon, with the approval of the Detachment Commander. Approval of Headquarters is not necessary, but notification of such action is requested by priority message. If the grounded pilot asks for a review of his case, it will be referred to Headquarters, where reviewing action will be taken, and notification of decision made. If at any time an operational need arises for a grounded pilot, this pilot will fly only at the discretion of the Flight Surgeon -- that is, if in his opinion said pilot would constitute no flying hazard to himself

or others and if it would be in the best interest of successfully accomplishing the mission. If and when reasons for grounding are discovered, in conformance with the above specification; grounding action will commence immediately and the pilot concerned will be prohibited from participation in flying activities from that date until such time as his weight conforms to the acceptable levels. Grounding action will apply to any and all training and Headquarters directed missions and will deprive the pilot concerned of any and all monetary benefits which accrue by virtue of flying. Initially, the specific methods for weight reduction will be left to the discretion of the local Flight Surgeon, since he has the best knowledge of individual pilot characteristics. This could include such measures as physical exercises, dietary procedures, or appetite depressants, all of which must be accompanied by motivation on the part of the pilot. Assistance desired by individuals will be offered by the Flight Surgeon.

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SECTION X

Preflight Crew Controls -

These preflight crew control procedures have as their purpose the preparation of a pilot in optimal physical and mental condition for high-altitude flight. They are intended to supplement the long-range physical maintenance program set forth in Section II through VIII of this manual. The safety and well-being of the pilot and the successful completion of the mission depends upon the accomplishment of these procedures. Implementation of both long-range and preflight crew conditioning programs will be a joint effort by the Squadron Surgeon, the Detachment Commander, and higher Headquarters.

a. Training flights of less than eight hours duration will be supervised to the extent deemed necessary by the Detachment Commander and Squadron Surgeon. In most cases, it will suffice to have the pilot briefed on any special conditioning required and allow him adequate time for unsupervised and voluntary pre-mission conditioning.

b. Training flights in excess of eight hours and all operational flights will require a supervised and controlled permission preparation phase to insure the optimum level of pilot conditioning. While it is not considered necessary to directly supervise every activity of the pilot, his program of activities will be scheduled and monitored during the crew

control period. This period of control may not be less than 18 hours. The following requirements are the direct responsibility of the Squadron Surgeon or his appointed representative:

(1) Observation of pilot's activities from time of alert to take off.

(2) Adequate quarters, dining facilities, and transportation will be provided so that a maximum control of environment can be effected.

(3) Rest, exercise, and diet will be controlled and monitored as required. A high protein, low residue preflight meal and eight hours of undisturbed sleep are mandatory.

(4) The Flight Surgeon will perform examinations of the pilot as required to assure the physical and mental capability of the pilot to carry out his assigned mission. The Detachment Commander will be immediately informed of any deviations from normal.

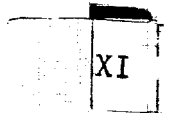
(5) Food, liquids, and medications taken by the pilot both before and during the flight will be only those prescribed by the Squadron Surgeon.

(6) The Flight Surgeon shall see that adequate pre-breathing of oxygen is carried out.

(7) The pilot will be assured of type and adequacy of survival and personal equipment necessary for the particular mission to be flown. He shall have current required immunizations.

(8) The Squadron Surgeon shall remain available for radio consultation throughout the flight.

(9) A record shall be kept of the crew control procedures used for each operational mission.



SECTION XI

Preflight Pilot's Schedule -

The following schedule is an outline of programmed activities to prepare primary mission pilots for flights. The operational situation will dictate the extent that the schedule is adhered to. The most important consideration is time out of bed prior to take off. This must be kept to a minimum during the last 12 hours prior to take off. A tired pilot is an ineffective pilot.

<u>TIME TAKE OFF</u>	<u>DURATION</u>	<u>PROGRAMMED ACTIVITY</u>
24:00	1 hr.	Out of bed and toilet
23:00	1 hr.	Breakfast
22:00	1 hr.	Leisure or preliminary briefing
21:00	2 hrs.	Exercise (golf, tennis, swimming, etc.)
19:00	1 hr.	Rest period
18:00	1 hr.	Lunch
17:00	2 hrs.	Leisure (reading, billiards, cards, etc.)
15:00	1 hr.	Light exercise (walking, horse-shoes, light calisthenics, or alternate preliminary briefing period.)
14:00	1 hr.	Rest period
13:00	1 hr.	Dinner
12:00	1 hr.	Preparation for bed
11:00	8 hrs.	Sleep
03:00	45 min.	Out of bed and toilet

<u>TIME TAKE OFF</u>	<u>DURATION</u>	<u>PROGRAMMED ACTIVITY</u>
02:15	45 min.	Final briefing
01:30	15 min.	Dressing and medical exam
01:15	- - -	Begin prebreathing
00:30	- - -	Station time
00:15	- - -	Cockpit hook-up completed
00:00	- - -	Take off

It is very important that the pilot have mental as well as physical rest prior to take off. He should not be bothered by a myriad of details and questions. The pilot should be allowed to remain free from the problems of mission preparation. There should be no reason to brief the mission pilot during other than the prescribed briefing periods. This is especially important during the last few hours prior to take off when people responsible for mission success become anxious. All personnel except those actually assisting the pilot should stay away to avoid agitating the pilot during this critical period. The entire preflight conditioning can be undone by one over-anxious team member. Efficiency is reassuring; haste is fatiguing.

SECTION XII

Dietary Considerations -

a. Controlled feeding of a high protein, low residue diet for mission pilots should begin twenty-four hours prior to take off. The objective of this controlled diet is to provide foods which can be almost completely absorbed from the gastro-intestinal tract, thereby leaving a minimum of residue for the formation of feces and intestinal gases. This obviates the need for frequent defecation and decreases the likelihood of significant gaseous expansion in the intestinal tract. It also provides a more steady state of caloric or energy production. This diet will be mandatory for mission pilots flying eight or more consecutive hours and is strongly recommended for the comfort and well-being of pilots of any mission in excess of six hours.

b. For local training flights of short duration, the Flight Surgeon will stress upon the mission pilot the necessity of providing proper pre-flight diets at home. Arrangement for proper diet in forward staging areas will be provided by the Detachment Commander by whatever means he deems advisable.

c. The basis for such a diet is meat, rice, eggs, sugar, small amounts of fruit juices, tea, and coffee. Foods allowed are as follows:

- (1) Beverages: Carbonated, coffee, tea.
- (2) Cereals and cereal products: rice, cream of wheat, noodles, macaroni.
- (3) Cheese: cottage.
- (4) Desserts: gelatin, sherbet, angel food cake, sponge cake, sugar cookies.
- (5) Eggs: soft or hard cooked, scrambled, poached.
- (6) Fat: butter or margarine, not in excess of three tablespoons per day.
- (7) Fruit: strained juice, canned, peeled fruit such as peaches or pears, (in limited amounts).
- (8) Meat: fowl, fish, beef, veal, liver, chicken, fish (baked or broiled).
- (9) Soups: clear broth with rice or noodles.
- (10) Sweets: sugar, jelly, hard candies (in limited amounts).
- (11) Vegetables: strained, such as tomatoes, peas, carrots, potatoes (baked or boiled); not over one serving per day.

d. Foods to avoid entirely during the twenty-four hour pre-flight period of feeding of the low-residue diet are as follows:

- (1) Beverages: milk and milk drinks.
- (2) Breads: coarse or whole grain.
- (3) Cerals and cereal products: whole grain, popcorn.

- (4) Cheese: all cheese, except cottage.
 - (5) Crackers: whole grain.
 - (6) Desserts: all rich desserts, such as pies and pastries.
 - (7) Fats: in excess of three tablespoons per day.
 - (8) Fried foods: all.
 - (9) Fruits: all, except strained fruit juice and canned, peeled fruit, such as peaches or pears.
 - (10) Meat: fowl, fish, if fatty (such as goose or mackerel), fat, pork, any tough cuts or meat, lamb and mutton.
 - (11) Nuts.
 - (12) Pickles.
 - (13) Soups: creamy or spicy.
 - (14) Spices, condiments, and highly-seasoned foods.
 - (15) Sweets: jam and marmalades; avoid all sugar and sweets in excess.
 - (16) Vegetables: all except strained vegetables such as tomatoes, peas, carrots, and baked or boiled potatoes.
- e. Between-meal snacks or drinks other than carbonated beverages, coffee, tea, or clear soups should be avoided.

f. A suggested menu for the pre-flight meal would be as follows:

<u>Food</u>	<u>Size of Serving</u>
Orange juice	4 oz.
Broiled sirloin steak (lean)	4-5 oz.

<u>food</u>	<u>Size of Serving</u>
Scrambled eggs	2
Toast	2 slices
Butter	2 teaspoons
Strawberry jelly	1 tablespoon
Coffee - sugar	

g. If significant time lapses between that last meal prior to take-off and actual flight, immediately prior to take-off and after all preliminary preparations are completed, a high carbohydrate, moderate protein, and low fat meal may be provided at the pilots discretion. Such a meal is conducive to increased altitude tolerance and, in addition, provides needed caloric and liquid requirements. A menu for such a meal which provides approximately 700 calories and 400 milliliters of water is as follows:

<u>Food</u>	<u>Size of Serving (oz.)</u>
Orange sherbert	4
Frozen strawberries	4
Sugar cookies	2
Milk	8 (even though this should be avoided at other times during the control period.)

This snack can be provided with only a minimal amount of preparation and effort.

h. At no time will a pilot attempt to accomplish a mission without proper dietary and liquid intake. These factors are especially important to the pilot in missions of extended duration. The feeding program should be aimed toward providing meals with adequate nutrition and fairly high consumer acceptability. In a sense, food can assume a role of stress alleviation in flight, since eating food will be one form of pleasurable activity. Palatability, acceptability, and ease of manipulation of food are extremely important facets of the feeding program, particularly inflight. The food likes and dislikes of each individual pilot should be considered in order to provide the most desirable types of food. Each pilot, too, should familiarize himself with the food which will be available to him. It is assumed that most, if not all, of the inflight feeding will of necessity be accomplished with the semi-solid foods, packaged in the Collapsible squeeze bottles or tubes. Due to the fact that mission lengths will vary considerably, each pilot's consumption in flight will be different. The local Flight Surgeon will assure proper intake for each flight and make adjustments accordingly. Menus should provide a total of approximately 2500-3000 calories per day. It is desirable, too, that pilots be maintained in a state of water balance both prior to and during flight; the recommended pre-flight diets provide liberal amounts of liquids and beverages for this purpose. Overhydration in the immediate pre-flight period, such as the ingestion

of excessive amounts of coffee, should be avoided to reduce the likelihood of encountering difficulties with inflight urination. Water intake should be approximately 2500-3000 milliliters per day. This includes that in juices, beverages, and any other fluids in the food or liquids consumed. Because of their dehydrating effect, the use of alcoholic beverages during the 24 hours prior to take-off is prohibited except under medical supervision. Before the evening meal, prior to a morning take-off, pilots will be allowed 3 oz. of 86 proof or 2 oz. of 100 proof beverage. Beer is not permitted because of its gas-forming tendencies.

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XIII

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SECTION XIII

Pre-flight Physical Evaluation -

a. The following evaluation will be performed by the Squadron Surgeon or his designated alternate prior to local flights over eight hours duration and all operational missions. (General observations by the Medical Staff and pre-flight nude weight will suffice for all other flights.) Page one of the Squadron Crew Control Form will be completely filled in with required information. Should further evaluations be found necessary, the indications for and results of these evaluations will be entered on this same sheet. The pre-flight condition of the pilot and his medical clearance to fly the mission involved will terminate the evaluation and the form will be signed by the examiner. Any crew control discrepancies or physical abnormalities will be reported immediately to the Detachment Commander. The pilot will also be informed of any deviations from normal. All completed Crew Control Forms are to be kept on file by the Squadron Surgeon for a period of one year.

b. The following examinations will be performed:

(1) Utilizing the Medical Crew Control Form pre-flight check-list, an evaluation will be made of the pilot conditioning program.

(2) A systemic review shall be made to determine any

symptomatology. The psychological portion of this evaluation will be emphasized to assure that the pilot is mentally prepared to make the intended flight.

(3) Specific physical checks as follows:

(a) General appearance - evidence of pallor, fatigue, nervousness, depression, physical disability, dermatitis, etc.

(b) Eyes - check pupillary reaction and size. Check sclera and conjunctiva for abnormalities.

(c) Ocular motility - check for nystagmus and normal extraocular muscle function.

(d) Nasal passages - check for patency and absence of erythema and discharge.

(e) Tympanic membranes - check for abnormalities of the external canal and tympanic membrane. Check for normal response to Valsalva maneuver.

(f) Lung Auscultation - listen for any abnormalities in respiratory sounds.

(g) Vital signs - record weight (nude), blood pressure (standing two minutes), respiratory rate, and oral temperature.

SECTION XIV

Drugs and Flying -

a. In general, no pilot shall remain on flying status while taking drugs. He shall not be permitted to fly for 24 hours following ingestion or injection of any drug with the following exceptions:

Acetylsalicylic acid

Sedatives

During the 24 hours prior to flight, these drugs will be taken only when directed by the Squadron Surgeon. Drugs taken during pre-flight period will be recorded on the crew control form.

b. Dexadrine -

(1) Drug Description: Dexadrine is Dextroamphetamine sulfate and is frequently referred to as "Go Pills" by flying personnel. The standard stocklist item is 6505-106-8715 and is supplied as 5 mg. tablets in bottles of 100. Its usual effect is psychic stimulation via its sympathomimetic action. This produces a state of wakefulness permitting one to carry out duties for many hours longer than normally possible. In normal persons, physical and mental efficiency are not appreciably altered. Undesirable side effects in some persons are nervousness, impaired judgment (euphoria), and loss of appetite. The usual dose for flying personnel is 2.5 mg. every 3 hours or 5 mg. every 6 hours.

(2) Rationale for use: Dexadrine is provided for use by pilots on especially long missions where the probability of fatigue is likely. Since fatigue in assigned type aircraft usually becomes manifest during periods of relatively stress-free flying such as occurs during ferry flights, night flights, and return flights from operational missions, Dexadrine is used at these times to provide a means of increasing alertness and wakefulness for period of demanding physical and mental activity. This is not expected to be a substitute for adequate crew control procedures.

(3) Method of use: On operational flights of over eight (8) hours and ferry flights of over six (6) hours duration, the pilot is provided with three 5 mg. Dexadrine tablets, each in its own dispenser. Each dispenser is marked to identify the tablet as number one, two, and three. The pilot can then keep track of his tablet use.

(4) Instructions to pilots: The pilots are instructed to use the tablet if fatigue sets in on long operational flights or somnolence occurs during ferry or night flights. One tablet is used. The second tablet is used only if a noticeable let-down is sensed as the effect of the first tablet wears off. The third tablet is to provide back-up in case of loss or damage of either or both of the other two tablets. Pilots are to be thoroughly briefed on the drug and its use.

(5) Responsibility for control: The responsibility

for control of the tablet supply, the instruction of the pilots, and the utilization of the tablets during flights rests with the Squadron Surgeon. He is also responsible for pre-testing pilots for effects of the drugs upon each individual. Notation of the use of these tablets and the effects obtained will be kept in each pilot's medical record.

c. Sedatives -

(1) Drug Listing -

See chart on last page of this section.

(2) Rationale for use: Sedation is occasionally necessary to assure adequate pre-flight sleep. Sleep is not adequate unless the pilot awakes refreshed and rested. Deep undisturbed sleep is almost impossible to achieve without sedation. Sedation, of course, is useless unless comfortable, private, and quiet quarters are provided. An additional use for sedation is during recycling of pilot's alert period prior to a long night flight.

(3) Method of use: Sedative and dose used must be individualized for each pilot. Also, it must be remembered that with repeated use, a certain amount of tolerance is developed requiring periodic reevaluation of individual requirements. Various combinations of short and medium action sedatives are especially effective but no new combination of the drugs should be utilized for pre-flight rest unless the effect

is tested while the pilot is in a non-flying status. The usual time for taking the prescribed dose is 1/2 to 1 hour prior to retiring; however, it must be assured that the duration of sedative effect not extend into the pre-flight briefing period.

(4) Control measures: The responsibility for control of sedatives rests with the Squadron Surgeon. Supply and utilization of these drugs will be directly supervised by the Squadron Surgeon or his alternate. The squadron Surgeon will be responsible for the instruction in use of sedatives given to his alternate and pilots concerned. No sedation shall be used by pilots other than that specifically prescribed by the Squadron Surgeon.

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<u>Nomenclature</u>	<u>FSL</u>	<u>How Supplied</u>	<u>Usual Dosage</u>	<u>Duration of Onset / Effect</u>
Secobarbital sodium (Seconal)	6505-140-3100	100mg. caps	1-2 caps	1/2 hr / 4-6 hrs.
Glutethimide (Doriden)	6505-616-9068	500mg. tab.	1-2 tabs	1/2 hr / 4-8 hrs.
Ethinamate (Valmid)	6505 NSL	500mg. tab	1-2 tabs	1/4 hr / 4 hrs

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SECTION XV

Decompression Sickness -

a. Cause: The exact physiological mechanisms giving rise to the various forms of this disorder are still not definitely known; however, the basic cause of all forms of decompression sickness is attributed to the formation of gaseous bubbles in the body during or following reduction of barometric pressure on the body. The chief gas involved appears to be nitrogen.

b. Effects: The signs and symptoms of this disorder are classified into four groups as follows:

(1) Skin Manifestations - An isolated area of the skin may itch or give rise to a hot burning sensation and display a mottled, raised, or blotchy appearance.

(2) Bends - Pain is generally observed, deep and aching in one or more of the body joints. This pain is aggravated by movement of the affected area.

(3) Chokes - The chief symptoms are a deep substernal burning, restricted breathing, and a dry hacking cough.

(4) Circulatory and Neurological Manifestations - The most serious forms of decompression involve either the circulatory system, the nervous system, or both simultaneously. Symptoms may range from visual disturbances and headache through paralysis, delirium, shock, coma, and death.

c. Treatment: The only acceptable treatment for a pilot who encounters decompression sickness is to increase the pressure on his body to reduce or eliminate the bubbles. This can be accomplished by descent, altering cabin pressure (if possible), or altering pressure within the pressure suit (if a pressure suit is worn). For the serious symptoms, immediate descent to ground level is indicated.

d. Prevention: Prebreathing or denitrogenation, a process whereby 100% oxygen is breathed prior to ascent to altitude, is the best procedure to follow in reducing the dissolved nitrogen tension in the body to a level where the critical ratio of $PN_2/P_B = 1.5$ or 2.0 (PN_2 = dissolved nitrogen tension in the body; P_B = total barometric pressure) will not be encountered. For all high flight profiles, a period of no less than 1 hour and 15 minutes will be spent prior to take-off breathing 100% oxygen. Inadequate prebreathing will be considered grounds for delay of take-off until proper prebreathing has been accomplished. It shall be the responsibility of the Squadron Surgeon or his appointed representative to assure that the directed prebreathing schedule is adhered to. Any discrepancies will be reported immediately to the Detachment Commander.

NB: The threshold for decompression sickness was identified as 30,000 ft. and above for many years AFR 50-27, 1961. In recent years, this altitude was lowered to 25,000 ft., and it appears now that the problem may, in fact, present itself as low as 18,000 ft.

SECTION XVI

Runway Alert -

The Medical Staff will provide ambulance standby for all primary aircraft take-offs and landings. The ambulance will be equipped with a crash radio*, stretcher, resuscitator, crash bag, carbon dioxide fire extinguisher, crash axe, and cable cutters.

The medical standby will assure that the proper fire equipment is on runway alert. He will also inform them of any aircraft emergency landing situation. The Medical Staff will be familiar with all means of emergency ground egress for the pilot. The medical standby will assist the Personal Equipment technician in recovery of the pilot following normal landings.

* At home station only.

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Approved For Release 2003/03/10 : CIA-RDP75B00285R000300060001-2

SECTION XVII

Post-flight Crew Controls -

a. The Flight Surgeon or representative shall be present for all landings to give immediate medical aid to pilot as required.

b. Following all flights, utilizing a pressure suit, the following are to be provided by the Squadron Surgeon:

(1) A period of 30 minutes allowed for the pilot to relax, shower, and dress. Pilot rations shall be issued as requested.

(2) The Squadron Surgeon shall question the pilot about inflight problems of any nature and utilize all means necessary to determine if said problem has had a detrimental effect upon the pilot's mental or physical condition. A record of the inflight condition of the pilot shall be kept on all operational missions.

(3) A hot, nutritious, palatable meal shall be ready for pilot's consumption upon completion of debriefing.

(4) Following each high flight the pilot shall not normally be considered for an additional high flight for a period of three times the flight duration. Any change in this time factor shall require a complete medical evaluation by the Squadron Surgeon and approval of the Detachment Commander.

c. Post-flight Physical Evaluation:

Page 2 of the Crew Control Form will be utilized in making the post-flight physical evaluation of the mission pilot. The blanks will be appropriately filled out and any discrepancies found will be recorded in the Flight Surgeon's comments section. The pilot's appraisal of the flight will be recorded under Pilot comments. Other than a post-flight nude weight, no physical examination will be required, except as deemed necessary by the Squadron Surgeon or Detachment Commander. For other than operational missions it will suffice to obtain pilot's comments and weight. Further evaluations will be made as indicated.

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SECTION XVIII

Aircraft Accident Investigation -

The Squadron Surgeon will be a member of the Squadron Aircraft Accident Investigation Board. He will carry out all medical aspects of the investigation as set forth in AFR 160-109, AFR 127-4, and AFM 127-1. The Squadron Accident Investigation Form is available for guidance in the investigation of inflight emergency pilot egress. It is recommended that the Squadron Surgeon be informed of all accidents and emergencies involving aircraft similar to the squadron primary aircraft. Where possible, he should make a first-hand investigation of any mishap and if not possible, he should be provided a copy of the Aircraft Accident Investigation Board Report.

XX

SECTION XIX

Monthly Activities Report -

The Squadron Surgeon will provide the Commander with a monthly report on the activities of the Life Support Section. Selected portions of this report will be forwarded to Headquarters as part of the Commander's Monthly Activities Report.

The following items will be included:

- a. Personnel status of the Life Support Section.
- b. Medical -
 - (1) Patient visits
 - (2) Illnesses of note (including any primary mission pilot illness)
 - (3) Physical examinations performed
 - (4) Immunizations given
 - (5) Changes in equipment
 - (6) Training programs
- c. Personal Equipment -
 - (1) Flight activities
 - (2) Discrepancies
 - (3) Changes in equipment
 - (4) Training programs
 - (5) Research and development programs
 - (6) Seat kit maintenance performed
- d. Survival -
 - (1) Changes in equipment

- (2) Training programs
- (3) Research and development programs

SECTION XX

Industrial Medicine -

Ground safety and industrial toxicology fall into the realm of the Squadron Surgeon. The relatively high concentration of vehicles and special equipment within the squadron compound creates ground safety hazards for which the Squadron Surgeon must be constantly on the alert. Another source of potential injury is the great number of toxic fluids used. It is the duty of the Medical Staff to make periodic surveys of the area to search for and remove potential industrial hazards. An awareness of possible toxic substances on hand, health hazards created, and control measures for each is the concern of the medical section. Where possible, specific antidotes should be prepared and kept in readiness for emergency use. The following publications are of use as references:

AF Regulations 160-17, 160-20, 160-118, 160-124

AF Pamphlets 160-6-1, 160-6-5.

The Squadron Surgeon shall be assigned as a member of the Base Safety Council and attend its monthly meetings.

XXI

SECTION XXI

Disaster Control -

The Squadron Disaster Control Plan is under the direction of the Squadron Disaster Control Officer. This plan coordinates squadron activities with those of main base in the event of large-scale natural or man-made disaster. The Life Support Section shall have the responsibility for the medical support for this plan. The medical support is coordinated with the Base Hospital plan and appears as an annex to the squadron disaster plan. Medical support includes medical casualty treatment facilities, radiation detection, emergency rations and water, and medical consultation to the Squadron Disaster Control Officer.

APPENDIX A

AIRCRAFT NO. _____ DATE _____

PILOT NO. _____ FLIGHT _____

PREFLIGHT CHECK LIST:

LAST FLIGHT DATE (HI) _____

TIME NOTIFIED _____

MEAL CONSUMED _____

TIME TO BED _____

TIME UP _____

MEAL CONSUMED _____

TIME TO PRE-BREATHING _____

TIME OF T.O. _____

SEDATION USED (TYPE & TIME) _____

DEXADRINE WITH PILOT _____

DEVIATIONS FROM STANDARD PROCEDURES _____

PREFLIGHT EXAMINATION:

SYMPTOMS _____

GENERAL APPEARANCE _____

EYES _____

OCULAR MOTILITY _____

NASAL PASSAGES _____

TYMPANIC MEMBRANES _____

LUNG ASCULTATION _____

WT _____ BP _____ T _____ P _____ RR _____

PREFLIGHT CONDITION OF PILOT _____

DEBRIEFING

FLIGHT DURATION _____

CABIN ALTITUDE _____

ACTUAL ALTITUDE _____

SUIT INFLATION (DURATION) _____

OXYGEN USAGE _____

NIGHT T.O. AND/OR LND _____

IFR _____

DEVIATIONS FROM NORMAL FLIGHT _____

INFLIGHT FOOD _____

INFLIGHT WATER _____

URINE PRODUCED _____

DEXADRINE (NUMBER AND TIME) _____

SYMPTOMS _____

PILOT COMMENTS _____

FLIGHT SURGEON COMMENTS _____

(FLIGHT SURGEON)

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APPENDIX B

MEDICAL STATUS RECORD

PILOT NUMBER _____

	DNIF	LEAVE	TDY	HIGH FLIGHTS
JANUARY				
FEBRUARY				
MARCH				
APRIL				
MAY				
JUNE				
JULY				
AUGUST				
SEPTEMBER				
OCTOBER				
NOVEMBER				
DECEMBER				

LAST PHYSICAL EXAM: _____

NEXT PHYSICAL EXAM: _____

LAST CHAMBER TEST: _____

NEXT CHAMBER TEST: _____

SPECIAL CONSIDERATIONS: _____

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HIGH FLIGHTS

PILOT NUMBER _____

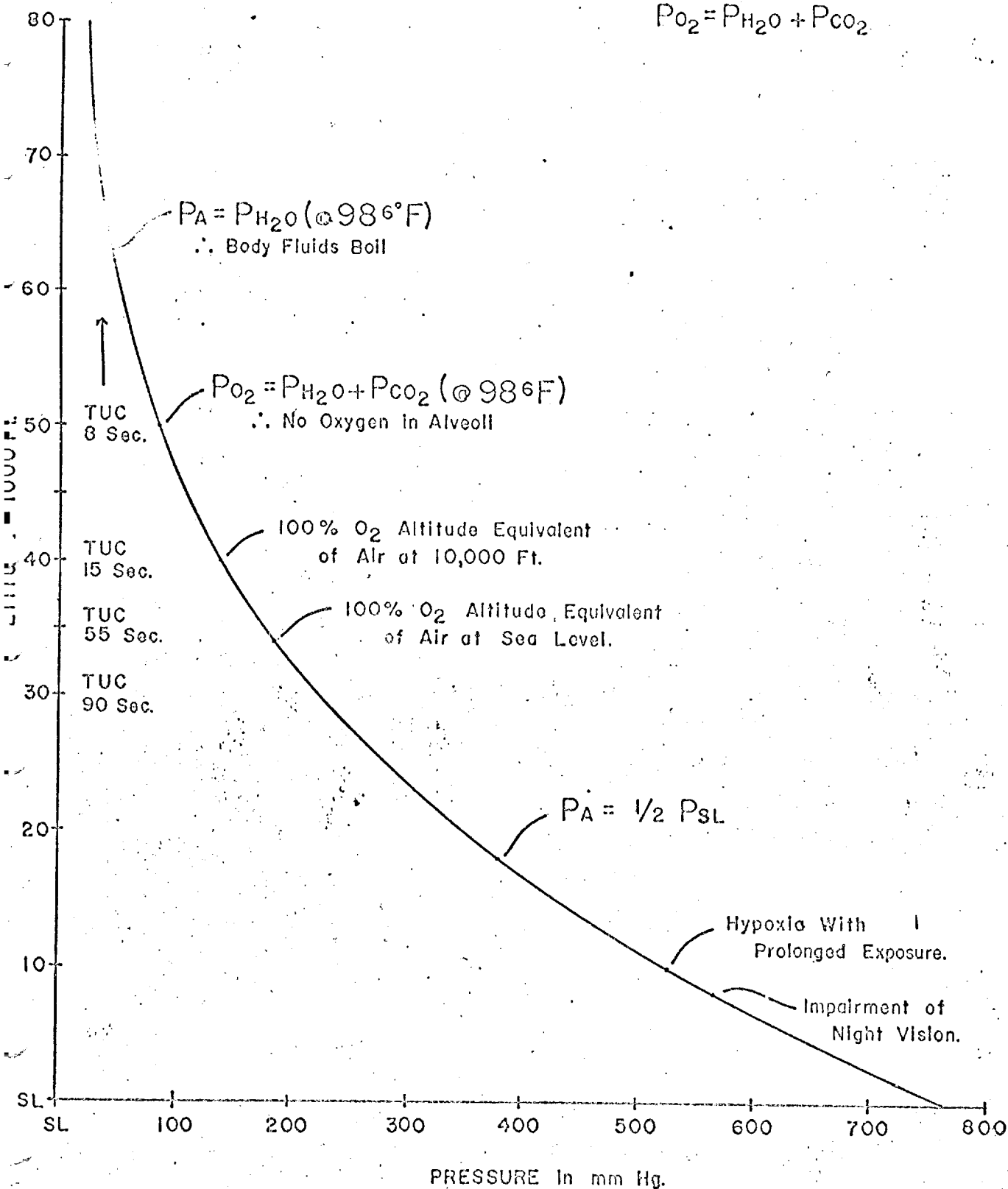
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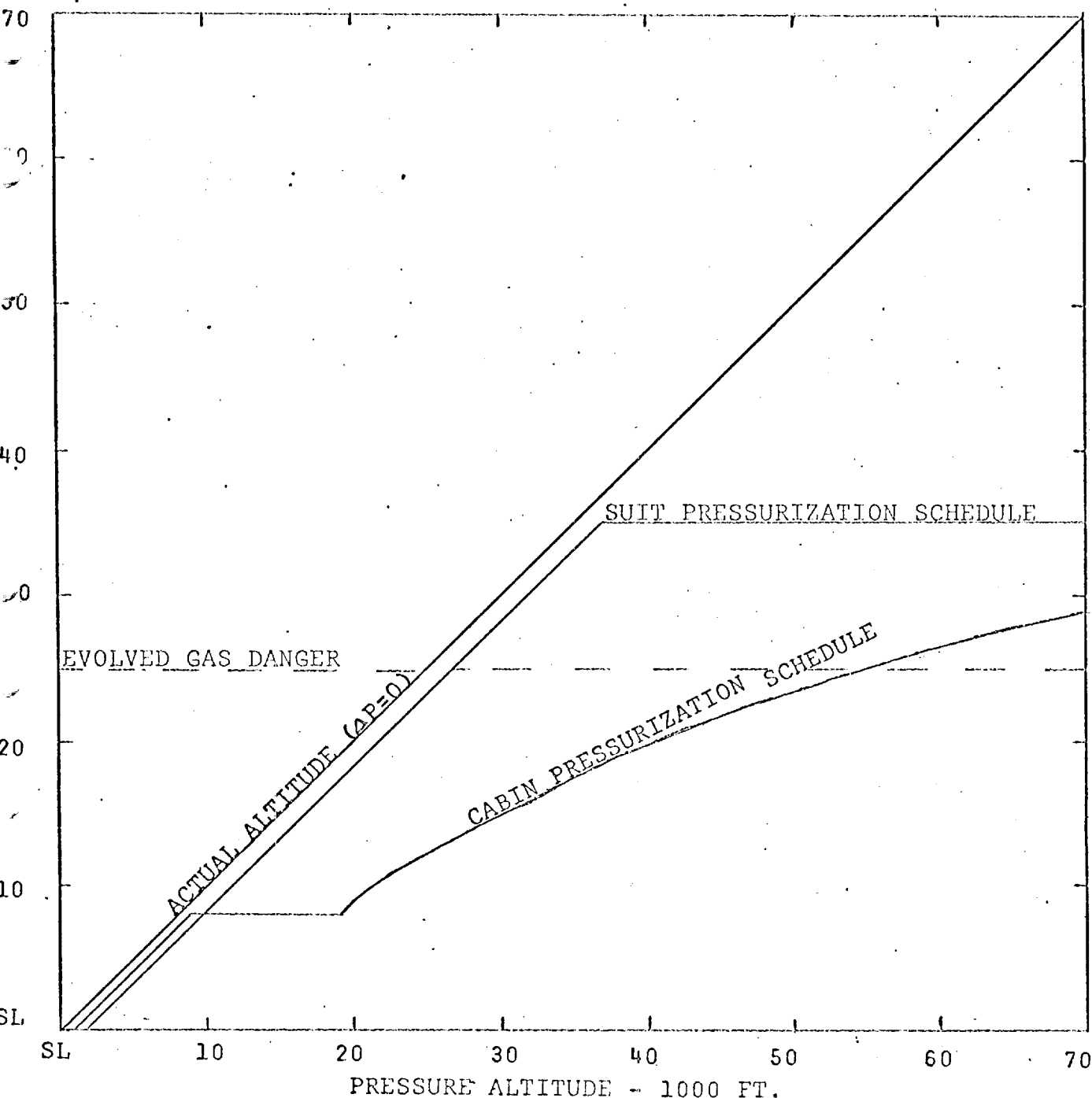
$$P_{O_2} = P_{H_2O} + P_{CO_2}$$



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DURATION OF PREBREATHING	% TOTAL BODY NITROGEN LOSS
15 Min.	25 %
30 Min.	50 %
45 Min.	62 %
60 Min.	70 %
75 Min.	75 %
90 Min.	78 %
120 Min.	85 %

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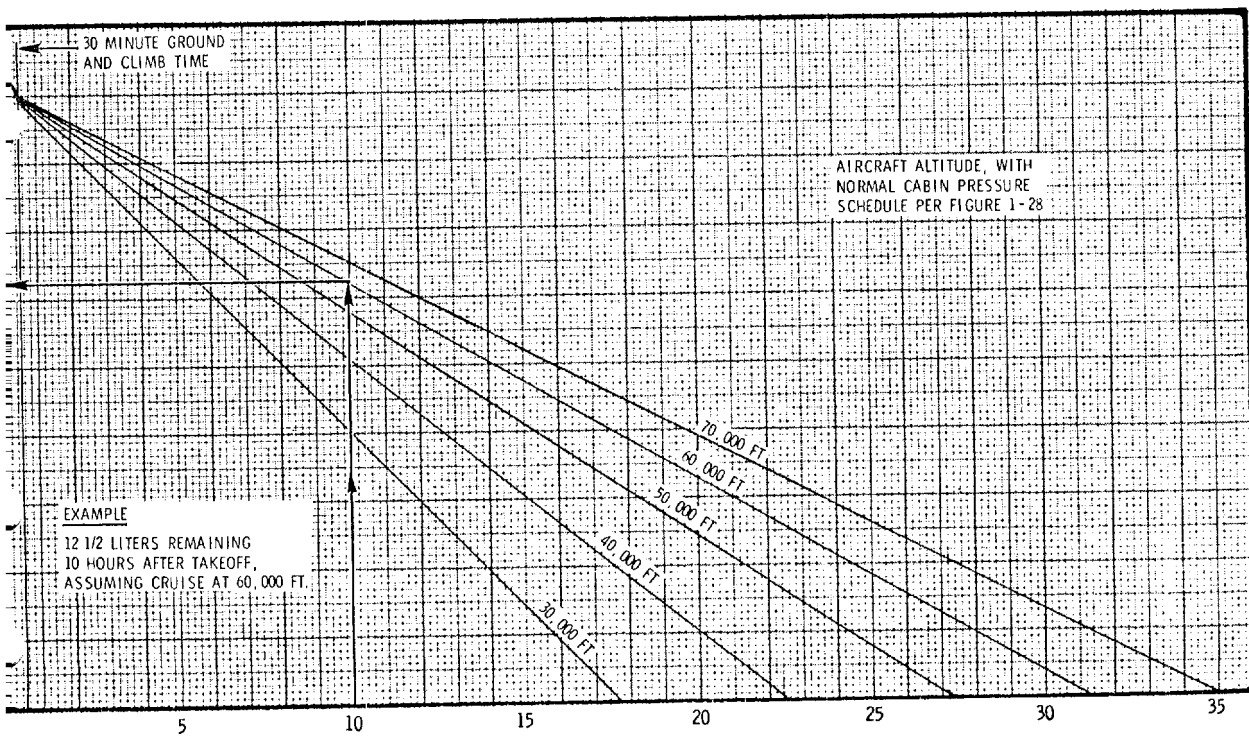
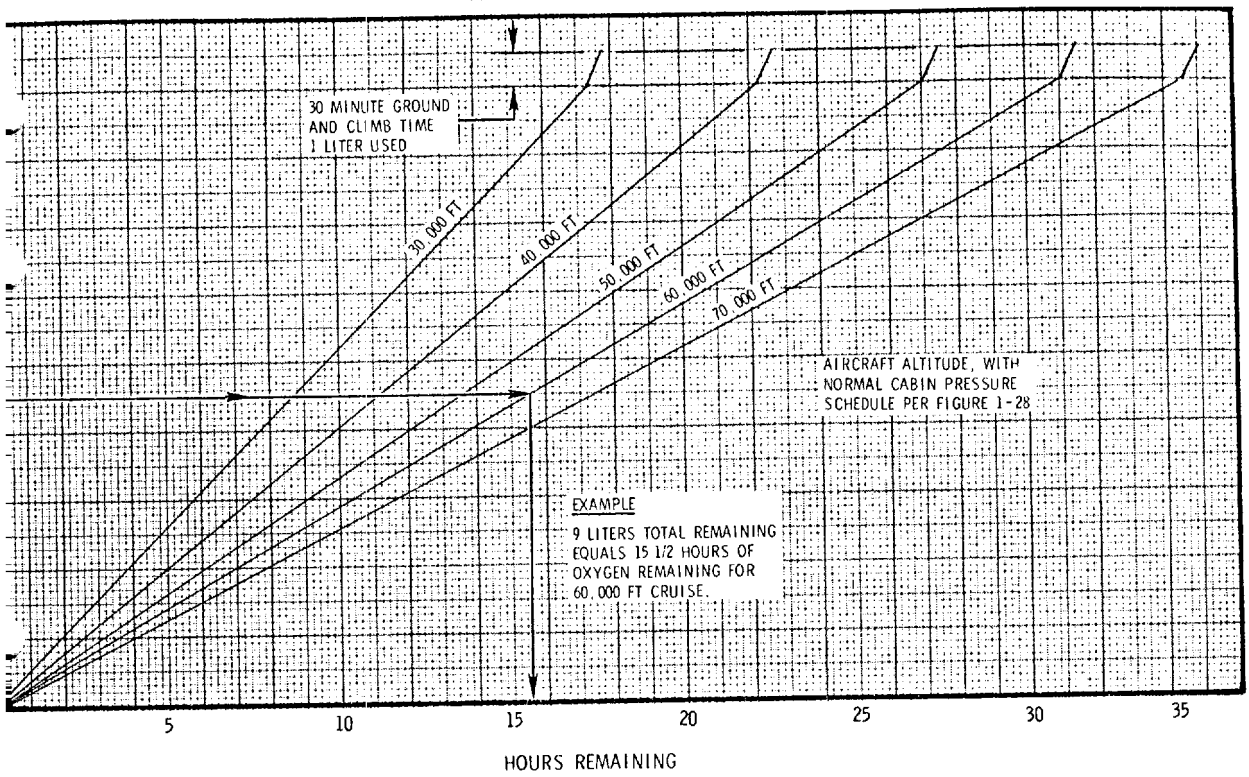


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DURATION CHART

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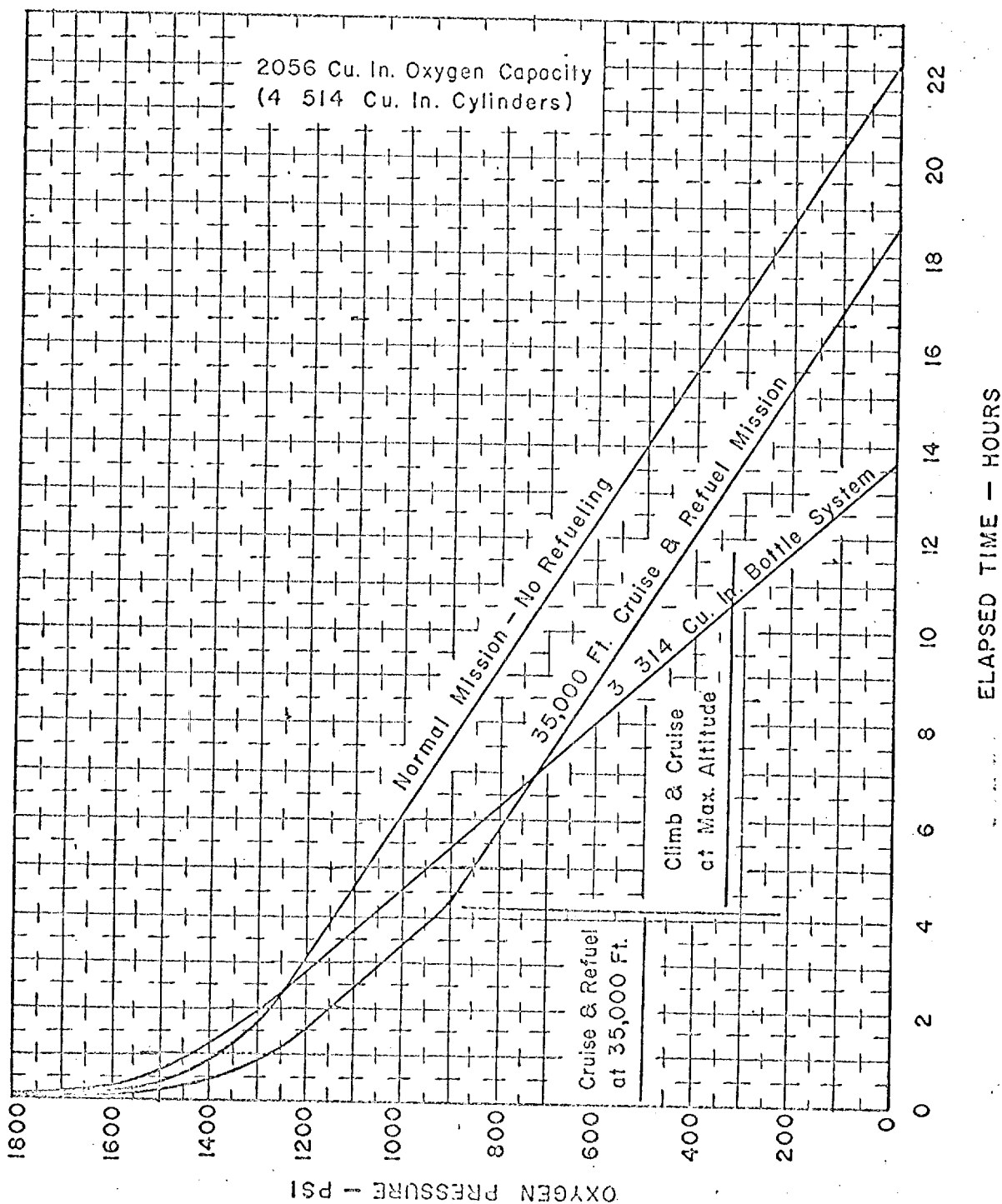
- 1 AIRCRAFT ALTITUDE SHOWN
- 2 9 1/2 LITERS PER CONTAINER
AT TIME OF ENGINE START
- 3 USAGE DETERMINED FROM MIL-D-19326D



APPENDIX F

OXYGEN CONSUMPTION

NORMAL CRUISE



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APPENDIX G

MEDICAL SURVEY
CHECK LIST FOR POTENTIAL
DEPLOYMENT SITES

1. Water Supply:
 - a. Quantity and quality of water
 - b. Purification measures required
 - c. Water heating facilities
 - d. Swimming facilities
 - e. Ice sources
2. Food Supply:
 - a. Supply source
 - b. Food storage facilities
 - c. Inspection procedures required
3. Mess Facilities:
 - a. Kitchen facilities
 - b. Food preparation and serving
 - c. Messing
 - d. Food handlers
 - e. Toilet facilities
4. Waste Disposal:
 - a. Garbage
 - b. Rubbish
 - c. Liquids
 - d. Human Waste

5. Quarters:
 - a. Heating and cooling
 - b. Ventilation
 - c. Lighting
 - d. Bedding
 - e. Toilet facilities
 - f. Laundry facilities
 - g. Ease of cleaning
6. Recreation Facilities:
 - a. Local area
 - b. R & R trips
7. Vermin Control:
 - a. Insects
 - b. Rodents
 - c. Reptiles
 - d. Other
8. Public Health:
 - a. Endemic disease
 - b. Required immunizations
 - c. Antivenins and special vaccines
9. Medical Facilities:
 - a. Local facilities
 - b. Air evacuation system
 - c. Medical resupply
 - d. Mortuary facilities

10. Crew Facilities:

- a. Quarters, mission and support crews
- b. Availability of special meals
- c. Pilot suiting and prebreathing area
- d. Accessibility of crew facilities to launch area
- e. Transportation

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Approved For Release 2003/03/10 : CIA-RDP75B00285R000300060001-2

APPENDIX H

PREPOSITIONING

PLAN AS OF JAN 1965

Prepositioned Life Support Gear:

- E-4-6 Water Purification Set
- E-4-10 Pharmacy
- E-4-11 Surgical and Office Equipment
- E-4-12 Mass Casualty Set
- E-4-13 Medical Supplies
- E-4-14 Preventive Medicine Set
- E-4-16 Field Laboratory
- E-4-20 Pilot Transfer Vehicle
- E-4-21 Pre-Breathing Chair
- E-4-22 220 Volt Air Conditioner
- E-4-23 Dehumidifier

Quick Reaction Deployment Gear:

- E-4-7 Ice Chest
- E-4-15 Medical Resupply
- E-4-17- or 19 Medical Bag *
- E-4-31 Pilot Gear *
- E-4-32 Pilot Gear *
- E-4-33 Pilot Gear *
- E-4-34 Prebreathing Gear *
- E-4-35 Personal Equipment Spares *

E-4-36 Tool Kit *

* These items are always necessary, the others are
to be carried as needed.

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